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Why South Dakota's Branchlines Face Abandonment

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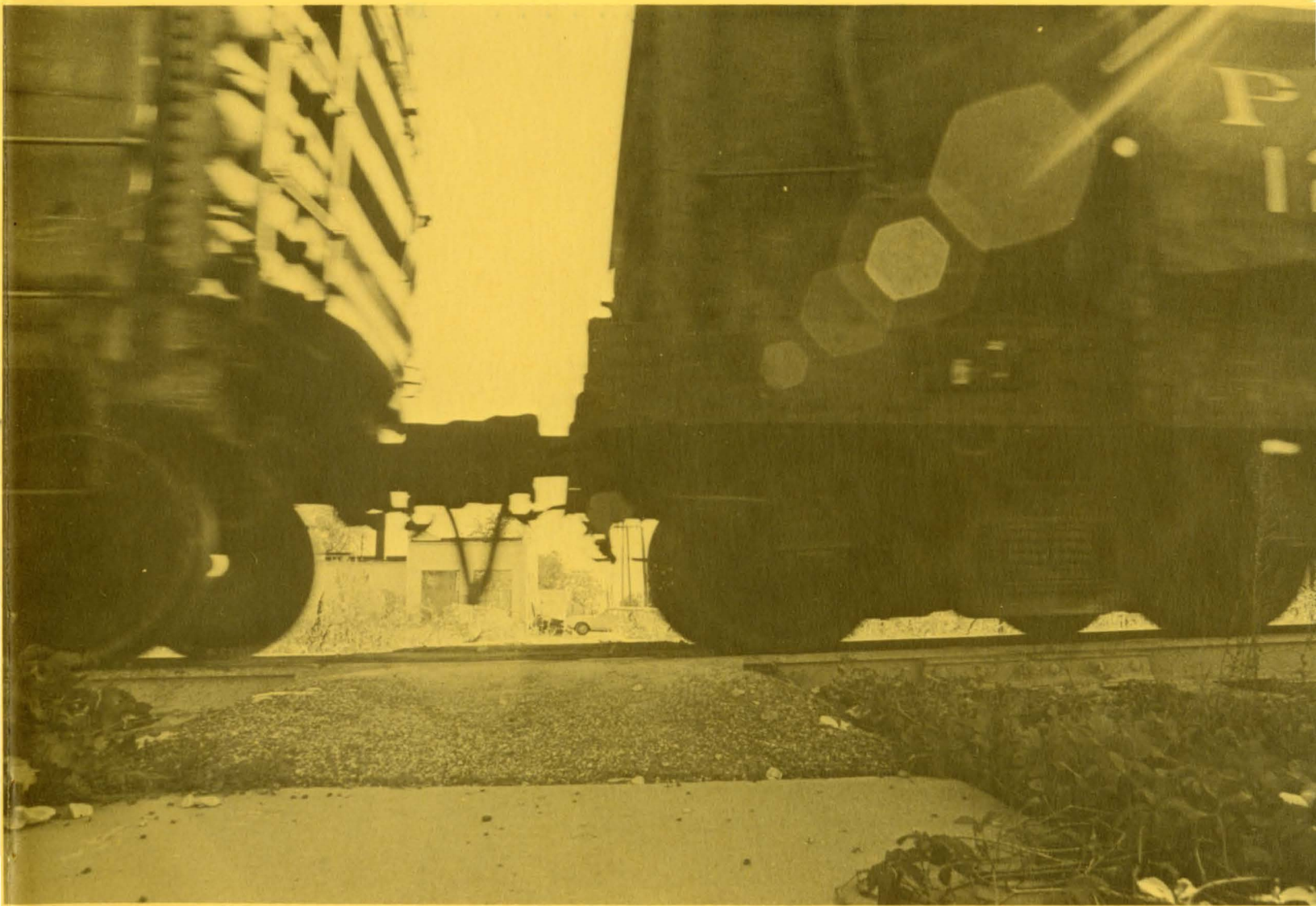

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WHY SOUTH DAKOTA'S BRANCHLINES FACE ABANDONMENT

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The railroads serving South Dakota discontinued service on several branchlines prior to 1978. Abandonment of three more branchlines is either pending or has already been approved by the Interstate Commerce Commission.

In response to requirements of the Railroad Revitalization and Regulatory Reform Act of 1976, railroads have published their intentions with respect to future rail service in South Dakota. These intentions include the abandonment within 3 years of 13 additional branchlines and the study for possible future abandonment of another 13 branchlines.

No Free Lunch

There are those who would gain and those who would lose. When a branchline is abandoned, owners of the railroad and most trucking firms in the area gain. Shippers located on highways and equipped to ship by truck gain while shippers dependent on rail service lose.

When determining the gains and losses from abandonment, however, it is equally valid to consider the effects of failure to abandon. In that case, the groups above exchange positions.

One conclusion could be that the abandonment issue leaves no room for economic adjustments which benefit some members of society and injure no one; or, there's no such thing as a free lunch.

Regardless of the outcome of the abandonment issue for any particular branchline, value judgments must be made. Such value judgments result in social decisions affecting the distribution of income among members of society. Typical of the process of making such decisions, rail abandonment issues cause friction among people which often result in substantial heat and smoke and little enough light.

More Flexibility With Trucks

The problem of abandonment can be traced directly to the economic effects that changes in technology have wrought. Development of the internal combustion engine and the private passenger car led to the building of a network of highways. The technological nature of highways is such that, in providing transportation services for cars, the highway simultaneously provides the same services for trucks. This public good characteristic was enhanced as bigger and faster trucks and better highways were developed.

The ubiquitous presence of the highway system provides a flexible character to trucks that is unmatched by railroads. Trucks can go anywhere and carry all but the largest loads. Their smaller and variable size give trucks advantages in collecting and delivering goods, while the development of faster trucks and highways and low cost fuels diminished the railroads' long haul advantages.

These technological developments have also provided financial flexibility to the trucking industry. The low capital investment required relative to the railroad industry and the active market for used equipment allow firms to enter and leave the trucking industry in response to the economics of the local transportation market.

Some institutional arrangements have augmented the technological gains of trucks relative to railroads. For example, the time consuming process of changing railroad rates through the ICC and the relatively inflexible labor usage of railroads due to union work rules are both unknown problems for the independent rural trucker carrying unprocessed agricultural products.

The fundamental cause of the abandonment problem has been the impersonal march of technology. The institutional

structure is continuously, albeit slowly and belatedly, adjusting to the realities of technology. Subsequent sections of this paper contain a brief description of the South Dakota rail system and the lines scheduled for abandonment. The situations described are the consequence of past technological and institutional changes.

SOUTH DAKOTA'S RAIL SYSTEM AND TRAFFIC

A Network of Branchlines

The South Dakota rail system shown in Figure 1 is a unique system of branchlines, both short and long.

Only three lines in the state depend upon substantial traffic which originates and/or terminates outside South Dakota:

1. The Burlington Northern route crosses Fall River County in the southwest corner of the state and carries Wyoming coal across Nebraska to eastern markets,

2. the Milwaukee line crosses most of the northern tier of the state through Aberdeen and carries North Dakota coal to the Big Stone power plant near Big Stone City in Grant County, and

3. the Burlington Northern route enters and leaves the state in eastern Minnehaha County and serves only the communities of Garretson and Sherman while connecting Sioux City with the twin ports of Duluth-Superior.

These three lines must be well maintained for the large volume of traffic originating outside South Dakota. Of the three, only the Milwaukee line through Aberdeen also provides good rail service to a large area within the state.

The rest of the rail network in South Dakota is supported entirely by traffic which originates and/or terminates within the state.

This means that within the area served by any of the state's branchlines, the local economy must generate sufficient traffic to cover the costs of maintaining and operating the line. Thus, the local economy must, in total or separately, produce enough commodities for export to other areas or demand enough imported goods from other areas and states to justify local rail service.

This requirement is difficult to satisfy in much of South Dakota. Much of our agricultural land is relatively unproductive, leaving the state sparsely populated and resulting in both relatively small and widely dispersed supplies of export commodities and demands for imported goods. This has meant that branchlines serving such areas must be long. The longer the line, the more costly its maintenance. As a consequence, much of the state's rail system is a high-cost, low-return operation when compared with rail systems in other states.

The existence of many small, widely dispersed pockets of commodity production and consumption would appear to be ideally suited to the use of truck rather than rail transportation services. Trucks, like trains, must have a roadway on which to travel. Where a long branchline was required, the highway had to be just as long. Highways had an advantage, however, in also providing services to private passenger cars. This means that many more people were directly benefited by highways and sufficient political support could be organized to construct highways on a social basis. The cost of roads was spread among the users and taxpayers at all levels of government.

Much of South Dakota is located far from primary markets which serve as outlets for the state's exports and origins of its imports. Until recent years, long distance movement of bulk commodities by truck remained more costly than rail service. Since the mid 1960's, however, availability of larger and faster trucks and interstate highways in combination with rapidly rising costs of branchline maintenance have reduced the relative cost to shippers of using trucks.

As traffic is diverted to trucks, branchlines are operated at a loss and

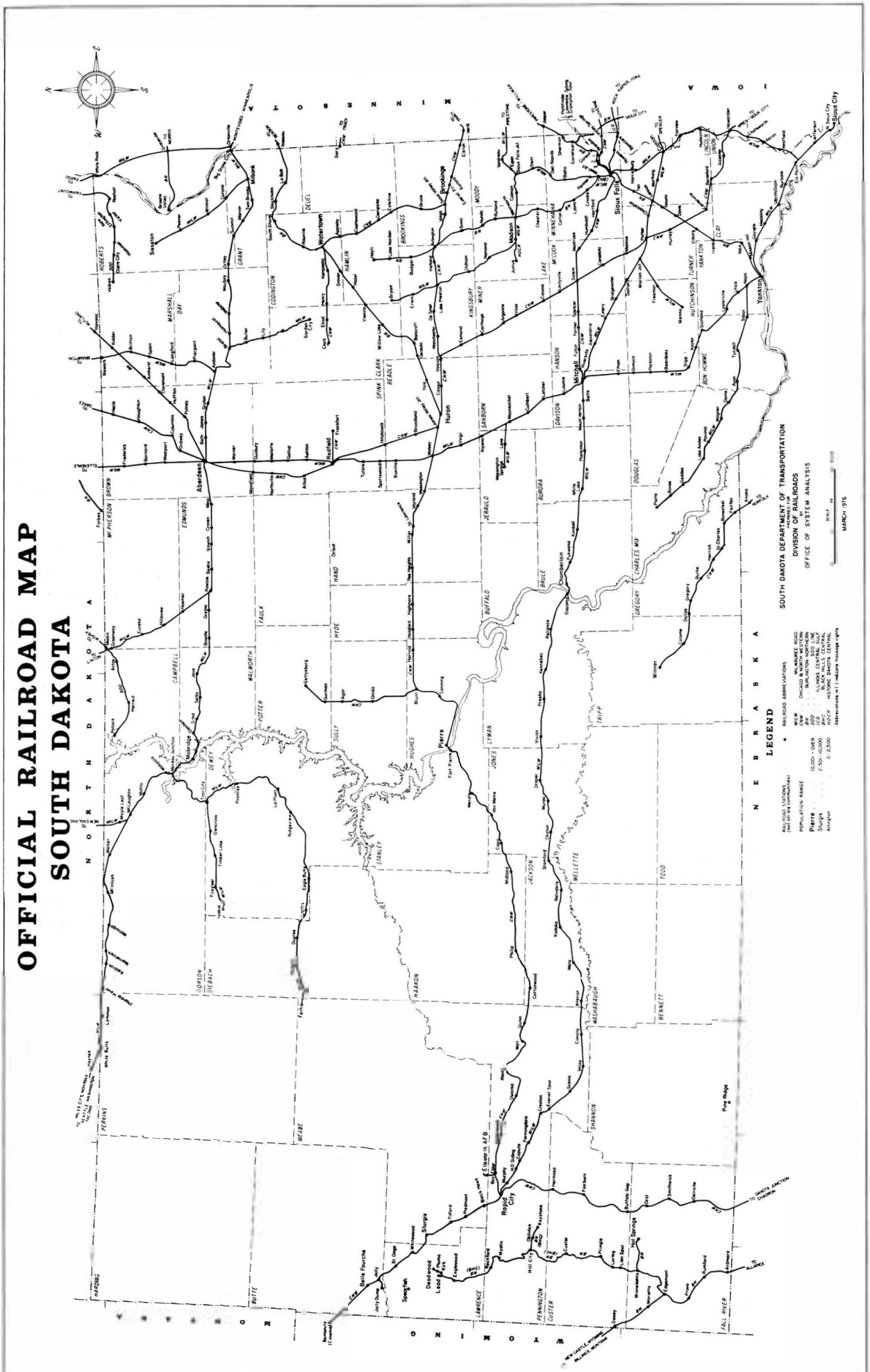

Fig. 1. Except for three lines, all railroads in South Dakota are branchlines.

their maintenance is deferred. Failure to maintain the rights-of-way and equipment results in slower rail service, more derailments, and greater loss of goods in transit. All of these further increase the cost to shippers of using rail service. Even more traffic is diverted to trucks.

Serious Decline in Traffic

The kind of products carried over the rail system can be seen in the Division of Railroads' traffic data. As shown in Table 1, rail traffic originating in South Dakota is concentrated in six commodity categories which include over 98% of carloads originating in the state. These six categories are farm products, non metallic minerals, food and kindred products, lumber and wood products, stone, clay and others, and waste and scrap metal. Farm products is by far the largest category.

The table can also be used to pinpoint the recent decline in rail traffic. Originating carloads dropped by 41,356 carloads or nearly 50% between 1973 and 1976. Of this decline, the carload originations of farm products dropped by two thirds, or some 32,000 carloads, and non metallic minerals carload originations declined 50%, or nearly 6,000 carloads.

The decline in originations of farm products was made more dramatic by the drought-caused short crop in 1976. Consequently, carloadings may be greater in 1977 than in 1976. Even then, the general decline in carloadings is still fundamentally due to the diversion of traffic to trucks. There is no prospect that 1977 carloadings will reach the 1973 or 1974 levels of over 40,000 cars.

Only a few product categories account for carload originations in the state. In contrast, a large number of commodities are brought into South Dakota by rail (Table 2).

The categories which provide significant terminations are: coal; non metallic minerals; food and kindred products; lumber and wood products; pulp, paper and others; chemicals and allied products; petroleum and coal products; stone, clay and others; primary metal; fabricated metal products; and machinery. These categories have provided approximately 90% of the carload terminations in each of the years between 1973 and 1976.

The consistency of the total share of these 11 categories masks the changes occurring in their composition. Carload terminations of coal have increased by some 22,000 carloads or 450% over the 1973 to 1976 period. This increase is almost entirely due to construction of the Big Stone Power Plant and movement of coal unit trains on the Milwaukee line through Aberdeen. This coal traffic supports the line and allows good rail service to be provided to shippers of other commodities over that line. It does not support services to shippers on other lines.

Carload terminations of commodities in the other 10 categories have declined by 11,400 or 34% from 1973 to 1976. These declines occurred primarily in non metallic minerals, petroleum and coal products, primary metal, fabricated metal products, and machinery. The lower number of terminating carloads of non metallic minerals suggests not only a decline in production in this sector, but a more than proportional decline in the use of the products within the state.

Combined data on carload originations and terminations during the 1973-76 period show a consistent decline. The most significant changes in rail traffic over the period were:

1. The number of carloads of farm products declined 65% from 49,000 to 17,000 carloads;
2. Non metallic minerals traffic declined 60% from 19,000 to less than 8,000 carloads;
3. Food and kindred products traffic declined 20% or nearly 2,500 carloads;
4. The number of carloads of chemicals and allied products fell by 1,800 or 35%;

TABLE 1

ORIGINATING NUMBER OF CARLOADS OF COMMODITIES
STATE OF SOUTH DAKOTA - ALL RAILROADS

Commodity	1973	1974	1975	1976
Farm Products	48,433	42,247	27,371	16,307
Forest Products	1	---	---	---
Fish & Marine Products	---	---	---	---
Metallic Ores	19	12	2	---
Coal	---	1	---	---
Crude Petroleum & Others	---	---	---	---
Non Metallic Minerals	11,907	8,869	6,096	5,913
Ordnance & Acces.	11	8	5	9
Food & Kindred Products	7,207	8,772	6,305	5,624
Tobacco Products	---	---	---	1
Basic Textiles	9	22	11	13
Other Textiles	2	22	1	---
Lumber & Wood Products	4,455	4,545	3,867	4,709
Furniture	5	10	3	1
Pulp, Paper and Others	35	20	30	32
Printed Matter	---	---	---	---
Chemicals & Allied Products	54	44	55	41
Petroleum & Coal Products	179	111	27	16
Rubber & Misc.	32	32	21	32
Leather & Related Products	---	---	21	12
Stone, Clay and Others	10,254	10,770	8,763	8,783
Primary Metal	72	30	34	49
Fabr. Metal Products	162	48	9	24
Machinery	97	126	186	175
Electrical Machinery	14	152	5	4
Transportation Equipment	91	56	117	103
Instruments & Others	---	---	---	---
Misc. Products	4	5	5	5
Waste & Scrap Metal	1,216	1,599	820	1,272
Misc. Freight Shipments	61	114	47	34
Containers & Others	272	210	147	114
Freight Forwarder Traffic	4	1	1	1
Shipper Assoc.	23	23	35	12
Misc. Mixed Shipments	47	30	24	24
Total	84,666	77,879	54,008	43,310
Six Commodities (1)	83,472	76,802	53,222	42,608
Six Commodities/Total	98.6%	98.6%	98.5%	98.4%

(1) Farm Products; Non Metallic Minerals; Food & Kindred Products; Lumber & Wood Products; Stone, Clay and Others; and, Waste & Scrap Metal.

TABLE 2

TERMINATING NUMBER OF CARLOADS OF COMMODITIES
STATE OF SOUTH DAKOTA - ALL RAILROADS

Commodity	1973	1974	1975	1976
Farm Products	798	863	668	1,000
Forest Products	---	---	---	---
Fish & Marine Products	18	9	2	---
Metallic Ores	3	---	---	1
Coal	6,105	6,399	23,162	28,000
Crude Petroleum & Others	---	---	---	---
Non Metallic Minerals	7,240	5,191	2,654	1,971
Ordnance & Acces.	67	22	10	7
Food & Kindred Products	4,554	4,247	3,738	3,681
Tobacco Products	8	8	12	16
Basic Textiles	34	42	54	66
Other Textiles	1	3	4	10
Lumber & Wood Products	2,623	2,389	1,925	2,316
Furniture	603	639	477	421
Pulp, Paper & Others	1,285	1,415	1,125	1,409
Printed Matter	2	2	1	4
Chemicals & Allied Products	4,808	4,657	3,986	3,033
Petroleum & Coal Products	3,219	2,063	1,574	1,478
Rubber & Misc.	380	329	252	310
Leather & Related Products	---	---	24	13
Stone, Clay & Others	4,997	5,816	5,990	5,675
Primary Metal	1,495	1,369	885	769
Fabr. Metal Products	1,771	1,295	621	613
Machinery	1,251	1,367	1,242	935
Electrical Machinery	454	412	215	199
Transportation Equipment	361	364	147	128
Instruments & Others	---	---	4	6
Misc. Products	48	44	26	17
Waste & Scrap Metal	20	18	19	15
Misc. Freight Shipments	82	83	29	10
Containers & Others	45	82	7	9
Freight Forwarder Traffic	141	74	273	110
Shipper Assoc.	87	194	170	300
Misc. Mixed Shipments	1,610	2,109	1,552	1,398
Total	44,110	41,505	50,848	53,920
Eleven Commodities (1)	39,348	36,208	46,902	49,880
Eleven Commodities/Total	89.2%	87.2%	92.2%	92.5%

(1) Coal; Non Metallic Minerals; Food & Kindred Products; Lumber & Wood Products; Pulp, Paper & Others; Chemicals & Allied Products; Petroleum & Coal Products; Stone, Clay & Others; Primary Metal; Fabricated Metal Products; and, Machinery.

5. The number of carloads of petroleum and coal products fell by 1,900 or 55%; and

6. Coal traffic increased by 22,000 carloads or 450%.

Since the coal traffic increase benefited a single rail line, the traffic change on the rest of the state's rail system can be seen by removal of coal traffic from the data. The results appear in Table 3.

Using carload data as a measure, non-coal rail traffic in South Dakota has decreased by 44% over a 4-year period. The decline is most dramatic for farm products.

Matched With A Drop In Service

Two other situations combine with this trend to make the outlook for rail service in the state discouraging. While farm production and grain shipments have been unduly low, railroad right-of-way and equipment have been allowed to deteriorate further. Gains which may occur in shipments of farm products may accrue primarily to truck traffic, as further deterioration of rail service raises the relative cost of rail shipments.

The second situation is related to the development of an industrial sector in the state. One way to retain segments of the rail system is to develop rail-using industries in various locations in the state. While industrialization has been occurring, many of the new plants produce computer components, electric appliances, medical supplies, or similar high-value, low-bulk products which are usually shipped by truck because of cost and service advantages. Perhaps the best hope for saving a rail line would be the locating of a plant using or producing bulky, low-value inputs or products. Food processing, fertilizer production, or coal burning power plants might fill these requirements.

TABLE 3

TOTAL NUMBER OF CARLOADS OF COMMODITIES ORIGINATING AND TERMINATING IN SOUTH DAKOTA, EXCLUDING COAL

Commodity	1973	1974	1975	1976
Farm Products	49,231	43,110	28,039	17,307
Non Metallic Minerals	19,147	14,060	8,750	7,884
Food & Kindred Products	11,761	13,019	10,043	9,305
Lumber & Wood Products	7,078	6,934	5,792	7,025
Furniture	608	649	480	422
Pulp, Paper & Others	1,320	1,435	1,155	1,441
Chemicals & Allied Products	4,862	4,701	4,041	3,074
Petroleum & Coal Products	3,398	2,174	1,601	1,494
Rubber & Misc.	412	361	273	342
Stone, Clay & Other	15,251	16,586	14,753	14,458
Primary Metal	1,567	1,399	919	818
Fabricated Metal	1,933	1,343	630	637
Machinery	1,348	1,493	1,428	1,110
Electrical Machinery	468	564	220	203
Transportation Equipment	452	420	264	231
Waste & Scrap Metal	1,236	1,617	839	1,287
Other	2,599	3,119	2,467	2,192
Total	122,671	112,984	81,694	69,230

OFFICIAL RAILROAD MAP
SOUTH DAKOTA

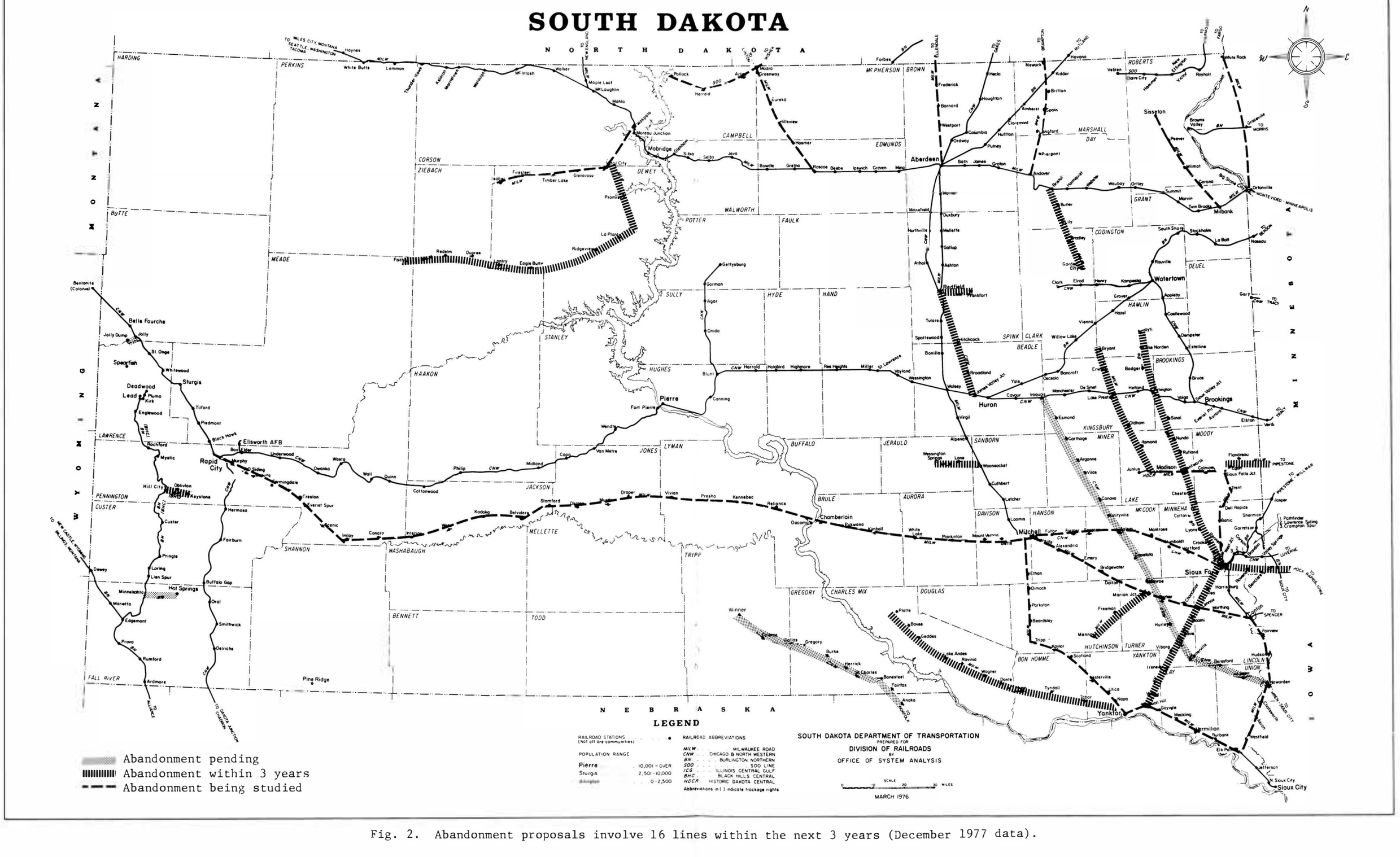

Fig. 2. Abandonment proposals involve 16 lines within the next 3 years (December 1977 data).

LINES PROPOSED FOR ABANDONMENT

The abandonment of three branchlines in the state has either been approved or is pending approval by the ICC. These lines appear in Figure 2:

1. The Burlington Northern line between Hot Springs and Minnehaha in Fall River County,

2. the Chicago and Northwestern line from Winner to Norfolk, NE, in Tripp and Gregory counties, and

3. the C&NW line from Iroquois to Wren, IA, in Kingsbury, Miner, McCook, Turner, Lincoln, and Union counties. This line has two main segments: Iroquois to Salem and Salem to Wren, IA.

Table 4 provides data on the traffic, estimated revenues, elevators, and grain shipments on each of these lines. The data show the steady decline in use of the lines.

The Hot Springs line is only 13 miles long. It is located in the Black Hills and serves no grain elevators. Although traffic on the line has not fallen off in recent years, the annual traffic has been only about four cars per mile.

The Winner line serves an area of relatively high potential in South Dakota. Tripp and Gregory counties produce approximately nine million bushels of grain, of which some four to five million are sold out of the area in an average year.

A major problem for the South Dakota segment of the line (61 miles) is the lack of traffic over the Nebraska segment (111 miles). In Nebraska the line crosses two east-west lines which attract traffic away from the Winner line. While the South Dakota segment is about 200 miles from the Sioux City terminals, much of the Nebraska leg is within 100 miles -- or competitive trucking distance -- of Sioux City. Lower service costs and competitive rates have allowed trucks to capture much of the transportation market in the area.

The northern leg of the Iroquois line serves only two elevators and carries very little traffic. South of Salem, traffic on the line is more substantial but has declined from approximately 40 cars per mile in 1974 to 12 cars per mile in 1976. Again the prospect of abandonment is in part self-fulfilling as shippers adjust in advance of actual abandonment. The southern leg of the Iroquois line is also within competitive trucking distance of Sioux City.

LINES SCHEDULED FOR ABANDONMENT WITHIN THREE YEARS

As of December 1977, railroad companies have announced their intentions to abandon service on 13 lines in South Dakota by 1980. These are shown in Figure 2.

1. The Milwaukee line from Faith to Trail City in Meade, Ziebach, and Dewey counties;

2. the C&NW line from Frankfort to Redfield in Spink County;

3. the C&NW line from Redfield to James Valley Junction in Spink and Beadle counties;

4. the Milwaukee line from Garden City to Bristol in Clark and Day counties;

5. the Milwaukee line from Bryant to Madison in Hamlin, Kingsbury, and Lake counties;

6. the BN line from Hayti to Sioux Falls in Hamlin, Kingsbury, Brookings, Lake, and Minnehaha counties;

7. the Milwaukee line from Wessington Springs to Woonsocket in Jerauld and Sanborn counties;

8. the Milwaukee line from Platte to Napa in Charles Mix, Bon Homme, and Yankton counties;

9. the Milwaukee line from Menno to Marion Junction in Hutchinson and Turner counties;

TABLE 4

DATA ON LINES APPROVED OR PENDING ABANDONMENT

	Hot Springs (BN)	Winner(3) (C&NW)	Iroquois(4) (C&NW)	Salem(5) (C&NW)
1973				
Net Ton Miles		3,019,374	120,087	4,512,221
Net Ton Miles/Mile		49,498	2,401	60,975
Gross Revenue(1)		$48,320	$1,920	$72,210
Gross Revenue/Mile		$790	$40	$975
1974				
Net Ton Miles	89,531	2,181,732	113,320	5,786,186
Net Ton Miles/Mile	6,898	35,766	2,266	78,192
Gross Revenue(1)	$1,045	$39,070	$2,030	$103,615
Gross Revenue/Mile	$80	$640	$40	$1,400
1975				
Net Ton Miles	100,490	1,223,804	75,747	3,047,650
Net Ton Miles/Mile	7,742	20,062	1,514	41,184
Gross Revenue(1)	$1,285	$24,605	$1,525	$61,280
Gross Revenue/Mile	$99	$405	$30	$830
1976				
Net Ton Miles	103,415	557,603	43,064	1,763,252
Net Ton Miles/Mile	7,967	9,037	854	23,479
Gross Revenue(1)	$1,260	$11,760	$910	$37,190
Gross Revenue/Mile	$97	$195	$20	$505
No. of Elevators	0	11	2	9
Grain Shipped 1974	-	2,700,000	6,200,000	(2)
Grain Shipped Rail 1974	-	1,000,000	4,000,000	

(1) Estimated based on the railroad company's gross revenue per net ton mile for its South Dakota traffic.

(2) Shipments data for both segments of the Iroquois line are combined to keep individual elevator data confidential. The bulk of the shipments occurred on the Salem leg of the line.

(3) Data for the South Dakota segment of the line only.

(4) Data for the line segment between Iroquois and Salem, SD.

(5) Data for the line segment between Salem, SD, and the Iowa state line near Hawarden, IA.

SOURCE: The South Dakota Railroad Industry Yesterday and Today, Vol. 3, South Dakota Department of Transportation, Division of Railroads, August 1976.

A Pilot Study of Efficient Grain Transportation and Marketing Systems for South Dakota, South Dakota State University, Economics Department, July 1976.

10. the BN line from Yankton to Sioux Falls in Yankton, Turner, Lincoln, and Minnehaha counties;

11. the Illinois Central Gulf line from Sioux Falls to Cherokee, IA, in Minnehaha County;

12. the Milwaukee line from Egan to Jackson, MN, in Moody County; and,

13. the BN line from Keystone to Hill City in Pennington County.

Data on the use of these lines are presented in Table 5.

As of November 15, 1977, applications to abandon four of these lines had been filed. These are the Faith, Bristol, and Menno lines of the Milwaukee and the ICG Sioux Falls line. While the data in Table 5 suggest that the three Milwaukee lines may be marginal operations, the ICG line appears to warrant closer analysis before an abandonment decision is made.

In this group of lines scheduled by the railroads for abandonment by 1980, the line carrying the greatest traffic is the North Western's Redfield line. This line between Redfield and James Valley Junction near Huron provides a north-south connecting link between the east-west line across central South Dakota to the Twin Cities and Aberdeen and Oakes, ND, to the north. While the line carries a significant volume of traffic, it serves only two communities - Hitchcock and Broadland - and parallels service offered by the Milwaukee line between Redfield and Wolsey. Abandonment of the line is dependent on the granting of operating rights on the Milwaukee line. Thus, although loss of service might seriously injure some individuals, the number of people injured by abandonment of the Redfield line would be small.

The Egan line scheduled for abandonment is the 12.4 miles of line between Egan and the Minnesota state line. Flandreau is the only South Dakota station which would lose service (Figure 2). Traffic data for this line have been omitted from Table 5 because only one station would be affected by abandonment. Abandonment of the Egan line would sever the connection of the Bryant to Madison and Madison to Egan segments with the Milwaukee Road service east to Minnesota. All traffic from the Bryant and Madison segments would have to be routed south to Sioux Falls and Sioux City. Since the primary outlets for grain from this area are in Minnesota, abandonment would divert grain traffic to Sioux City (if moved by rail) or to truck movement (if shipped to Minnesota).

The diversion of traffic to trucks due to abandonment of the Egan line could reduce traffic sufficiently to warrant abandonment of the Bryant and Madison segments also. In fact, the Bryant segment is scheduled for abandonment by 1980, and abandonment plans have been filed. The loss of service on the Bryant line could also divert enough traffic from the Egan connecting segment to increase abandonment prospects on that line. It is also possible that abandonment of the line between Hayti and Sioux Falls, as proposed by the Burlington Northern, would divert some traffic onto the Madison segment. Thus, the interdependence of lines and the potential for wrong decisions based on analysis of single line segments is apparent.

34-Car Rule

A rough standard sometimes used to evaluate branchline productivity is the so-called "34-car rule" devised by the ICC. This rule estimated the breakeven level of traffic on a branchline as 34 cars per mile per year. At 2,000 bushels of grain per car and 60 pounds per bushel, this standard would require a traffic level of approximately 2,000 net ton miles per mile of line. Of the lines in Table 5, only the Frankfort, Bristol, and Keystone lines failed to meet this standard in 1976. The Frankfort and Bristol lines met this standard prior to 1976.

TABLE 5

LINES TO BE ABANDONED BY 1980

	Faith (Milw)	Frankfort (C&NW)	Redfield (C&NW)	Bristol (Milw)	Bryant (Milw)	Hayti (BN)	Woonsocket (Milw)
1973							
Net Ton Miles	3,121,826	103,176	27,439,956	-	1,727,621(2)	-	222,766
Net Ton Miles/Mile	24,313	9,380	762,221	-	16,853	-	2,978
Gross Revenue(1)	$275,680	$1,650	$439,130		$162,215		$20,915
Gross Revenue/Mile	$2,505	$150	$12,200		$1,585		$1,340
1974							
Net Ton Miles	1,864,241	161,168	18,560,574	-	1,397,740(2)	3,663,512	198,153
Net Ton Miles/Mile	14,519	14,693	515,571	-	13,636	42,798	12,702
Gross Revenue(1)	$170,025	$2,885	$332,370		$145,375	$42,775	$20,610
Gross Revenue/Mile	$2,505	$260	$9,235		$1,420	$500	$1,320
1975							
Net Ton Miles	714,318	133,178	16,725,785	164,459	269,372	2,483,231	118,554
Net Ton Miles/Mile	5,563	12,107	464,605	5,671	5,671	29,010	7,600
Gross Revenue(1)	$77,110	$2,680	$336,310	$22,025	$36,080	$31,805	$15,880
Gross Revenue/Mile	$700	$245	$9,340	$770	$760	$370	$1,020
1976							
Net Ton Miles	1,105,930	12,992	16,231,770	43,702	484,100	1,963,771	81,415
Net Ton Miles/Mile	8,613	1,214	448,391	1,521	10,190	22,941	5,217
Gross Revenue(1)	$165,060	$275	$342,375	$7,125	$78,925	$23,945	$13,275
Gross Revenue/Mile	$1,500	$25	$9,510	$250	$1,660	$280	$850
No. of Elevators	7	1	1	4	6	12	2
Grain Shipped 1974	950,000	(4)	(4)	1,200,000	2,000,000	5,400,000	(4)
Grain Shipped Rail 1974	180,000			1,000,000	1,000,000	2,400,000	

TABLE V - CONTINUED

	Platte (Milw)	Menno (Milw)	Yankton (BN)	Sioux Falls (ICG)	Egan (Milw)	Keystone (BN)
1973						
Net Ton Miles	2,046,726	288,748			(3)	
Net Ton Miles/Mile	24,659	13,243				
Gross Revenue(1)	$192,175	$27,110				
Gross Revenue/Mile	$2,315	$1,245				
1974						
Net Ton Miles	2,993,316	272,592	3,284,764	1,954,000	(3)	27,585
Net Ton Miles/Mile	36,064	12,504	52,098	131,000		3,171
Gross Revenue(1)	$311,330	$28,350	$38,350	$92,892		$320
Gross Revenue/Mile	$3,750	$1,300	$610	$6,214		$35
1975						
Net Ton Miles	2,426,110	189,279	2,196,170	210,000	(3)	5,130
Net Ton Miles/Mile	29,230	8,683	34,832	14,047		590
Gross Revenue(1)	$324,950	$25,350	$28,130	$71,496		$65
Gross Revenue/Mile	$3,915	$1,165	$445	$4,782		$8
1976						
Net Ton Miles	2,198,570	112,739	1,751,108	173,000	(3)	1,278
Net Ton Miles/Mile	26,489	5,170	27,773	11,572		147
Gross Revenue(1)	$358,445	$18,380	$21,350	$81,000		$15
Gross Revenue/Mile	$4,320	$845	$340	$5,418		$2
No. of Elevators	12	4	7	1	1	0
Grain Shipped 1974	3,400,000	1,100,000	2,700,000	(4)	(4)	0
Grain Shipped Rail 1974	2,000,000					

(1) Estimated based on each railroad company's gross revenue per net ton mile for its total South Dakota traffic.
(2) Combined data for the entire Madison to Bristol line before the abandonment of Bryant to Garden City segment in 1974.
(3) Only the Flandreau station would lose rail service.
(4) Data omitted to protect confidentiality.

Breakeven Rule

Another standard of branchline financial viability was developed by the U.S. Department of Transportation.* This standard was developed for eastern railroads and is probably not directly applicable to South Dakota. It does provide a basis for comparison.

The standard estimated the number of carloads necessary for a line to break even for each length of line between one and 39 miles. The breakeven carload estimates fit the following function:

$$\ln C = \ln 84 + .833 \ln M \qquad (R^2 = .996)$$

where C is the breakeven number of carloads and M is length of line in miles. The data in Table 6 indicate the breakeven number of carloads for South Dakota lines proposed for abandonment along with the length of the lines and estimated carloads. Estimated carloads are determined as net ton miles per mile divided by 60 tons per carload.

The estimated breakeven carload standards shown in Table 6 may be too high. The standard is based on the length of each line rather than the average length of haul. If the average length of haul is assumed to be two thirds of the length of

*U.S. Department of Transportation, Federal Railroad Administration, Research Report OE-73-3, "Development and Evaluation of an Economic Abstraction of Light Density Rail Line Operations," June 1973.

TABLE 6

ESTIMATED BREAKEVEN STANDARD

Line	Miles	Breakeven Carloads	Estimated Carloads 1973	1974	1974	1976
Hot Springs	12.98	711		115	129	133
Winner(1)	61	2,582	825	596	334	151
Iroquois(1)	50	2,188	40	38	25	14
Salem(1)	74	3,034	1,016	1,303	686	391
Faith(1)	110	4,221	405	242	93	144
Frankfort	11	620	156	245	202	20
Redfield	36	1,664	12,704	8,593	7,743	7,473
Bristol(2)	28.7	1,378			95	25
Bryant(2) (1)	105	4,061	280	227		
Bryant(2) (1)	47.5	2,097			95	170
Hayti(1)	85.6	3,425		713	484	382
Woonsocket	15.6	829	50	212	127	87
Platte(1)	83	3,338	411	601	487	441
Menno	21.8	1,096	221	208	145	86
Yankton(1)	63.05	2,655		868	581	463
Sioux Falls	14.95	800		2,183	234	193
Egan	12.4	684				
Keystone	8.7	510		53	10	2

(1) Length of line not within the 1 to 39 miles for which the standard is estimated.

(2) For 1973 and 1974, the Bryant line includes the entire line from Bristol to Madison. For 1975 and 1976, the Bristol line includes the Bristol to Garden City segment and the Bryant line includes the Bryant to Madison segment. The Garden City to Bryant segment was abandoned.

line, the estimated number of carloads necessary to break even would be reduced by nearly 30% for each line. Such a downward adjusted level of breakeven carloads is still well above estimated carload movements for virtually all of the line.

This standard, developed for eastern branchlines, may also overstate necessary breakeven traffic for South Dakota lines if line maintenance and operating costs are lower in South Dakota or if cars originating in South Dakota are heavier or generate more revenue than cars originating on eastern lines.

There is not likely to be any significant difference in line maintenance or operating costs between regions, because labor and materials tend to have uniform prices for all lines. There also appears to be no reason to assume consistently greater net tons per carload originating in South Dakota. In fact, since eastern lines can often carry larger jumbo hopper cars, any bias in loaded weight per car would appear to increase the estimated number of carloads necessary for breakeven operation in South Dakota.

Carloads originating in South Dakota would tend to contribute greater revenues than those on eastern lines for the same commodities shipped, due to longer distances involved in shipping South Dakota goods to markets. On the other hand, eastern lines carry more non-agricultural, higher-value commodities which pay higher tariffs per carload than agricultural commodities. Therefore, there is no reason to assume consistently greater revenue from South Dakota traffic.

This reasoning leads to the conclusion that the standard is not necessarily inappropriate for use with South Dakota lines even though estimated for eastern lines.

The data in Table 6 show that only one of the lines scheduled for abandonment comes close to meeting the breakeven standard even when the standard is adjusted for length of haul. The single line is the Redfield line.

Since the standard is an estimate and may be inappropriate for use with South Dakota lines, this does not mean that the Redfield line should be retained and/or that the other lines should be abandoned.

The divergence of results when applying the 34-car rule and the breakeven standard suggests that most of the lines are probably in neither the "definitely retain" nor "definitely abandon" categories. Rather, the results imply that the viability of each line individually and the contribution of each line to the rail system in South Dakota must be studied thoroughly before any decision to abandon or not to abandon is made.

CONCLUSION

The South Dakota rail system is a unique system of long and short branchlines depending largely on traffic originating and/or terminating in the state. Technological change and institutional inflexibility have caused the rail system to lose much of its earlier relative cost advantage to trucks. This loss of the relative cost advantage of rail shipment is reflected in the traffic data.

The loss of traffic and the consequent financial losses due to operation of a branchline do not necessarily imply that abandonment of service is appropriate. If the line provides a valuable connecting link between other economically viable lines, the value of the connecting service should be included in analyzing the line. If the service provides valuable indirect social benefits to third parties, these benefits increase the total social value of the service. If society were to compensate the railroad company for these benefits, service might be retained.

Breaking down the institutional inflexibility may allow the operating and maintenance costs to be reduced and therefore reduce the necessary traffic required for breakeven operation. For example, shortline operations can sometimes reduce labor costs by avoiding union work rules and pay scales. The company might also reduce excess investment in capital equipment by allowing rental of the maintenance and operating equipment of other lines.

increased rate making flexibility or increased motor vehicle taxes may divert traffic back to a rail line.

In summary, South Dakota may lose service on many of its branchlines. Before any service is abandoned, however, the total value of service on the line - including the value of connecting and complementary service and social benefits - must be compared with the cost of providing that service.

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